# Exactech® Equinoxe® Extra Short Humeral Heads
## Special 510(k) – 510(k) Summary of Safety and Effectiveness

FEB 1 1 2014

**Sponsor:** Exactech, Inc.
2320 N.W. 66th Court
Gainesville, FL 32653

Phone: (352) 327-4762
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FDA Establishment Number 1038671

**Contact:** Patrick Hughes
Senior Regulatory Affairs Specialist

**Date:** January 9, 2014

**Trade of Proprietary or Model Name(s):**
Exactech® Equinoxe® Extra Short Humeral Heads

**Common Name:**
Total Shoulder Arthroplasty – Humeral Components

**Classification Name:**
Prosthesis, shoulder, semi-constrained, metal/polymer cemented (CFR 888.3660, Shoulder joint metal/polymer semi-constrained cemented prosthesis Class II, Product Code KWS)

**Information on devices to which substantial equivalence is claimed:**

| 510(k) Number | Trade or Proprietary Model Name | Manufacturer |
|---|---|---|
| K042021 | Equinoxe Shoulder System | Exactech, Inc |

**Indications for Use:**
The Equinoxe Shoulder System is indicated for use in skeletally mature individuals with degenerative diseases or fractures of the glenohumeral joint where total or hemi-arthroplasty is determined by the surgeon to be the preferred method of treatment.

- The cemented primary humeral stem, long/revision stem, fracture stems and all Equinoxe glenoids are intended for cemented fixation.
- The press-fit humeral stems are intended for press-fit applications but may be used with bone cement at the discretion the surgeon.
- The reverse humeral components are intended to be used in cemented applications or in revision cases when the humeral component is well-fixed/stable, as deemed by the orthopaedic surgeon.
- Humeral Heads are intended for use in cemented and press-fit applications.

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Clinical indications for the PRIMARY (P), LONG/REVISION (L), and FRACTURE (F) humeral components are as follows:

| P | L | F | Indications |
|---|---|---|---|
| √ | √ | | Rheumatoid arthritis, osteoarthritis, osteonecrosis or post-traumatic degenerative problems |
| √ | √ | | Congenital abnormalities in the skeletally mature |
| √ | | | Primary and secondary necrosis of the humeral head. |
| √ | | √ | Humeral head fracture with displacement of the tuberosities |
| √ | √ | | Pathologies where arthrodesis or resectional arthroplasty of the humeral head are not acceptable |
| √ | √ | | Revisions of humeral prostheses when other treatments or devices have failed (where adequate fixation can be achieved) |
| | | √ | Displaced three-part and four-part upper humeral fractures |
| | √ | | Spiral and other fractures of the mid-humerus (in combination with glenohumeral degenerative diseases) |
| | √ | | Revision of failed previous reconstructions when distal anchorage is required |
| √ | √ | | To restore mobility from previous procedures (e.g. previous fusion) |

The Equinoxe Reverse Shoulder System is indicated for use in skeletally mature individuals with degenerative diseases of the glenohumeral joint and a grossly deficient, irreparable rotator cuff. The Equinoxe Reverse Shoulder is also indicated for a failed glenohumeral joint replacement with loss of rotator cuff function resulting in superior migration of the humeral head.

The Equinoxe Platform Fracture Stem is indicated for use in skeletally mature individuals with acute fracture of the proximal humerus and displacement of the tuberosities, displaced 3- and 4-part fractures of the proximal humerus (hemi-arthroplasty), or acute fracture of the proximal humerus with failure of the glenohumeral joint (primary total shoulder arthroplasty). The Equinoxe Platform Fracture Stem is also indicated for acute fracture of the proximal humerus in combination with degenerative diseases of the glenohumeral joint and a grossly deficient, irreparable rotator cuff resulting in superior migration of the humeral head (reverse total shoulder arthroplasty). The Equinoxe Platform Fracture Stem is indicated for cemented use only.

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**Device Description:**
The proposed Equinoxe extra short humeral heads represent a modification to Equinoxe short humeral heads cleared per 510(k) K042021. Both predicate and proposed devices have the same intended use, general design features, and basic fundamental scientific technology. The only differences between predicate and proposed devices are the following dimensional modifications:

1) Proposed device thickness is decreased by 3mm.
2) Proposed device female taper length is reduced by 5mm.
3) Proposed device female taper length is offset, where only 44mm and 47mm predicate devices feature offset female taper lengths.

These modifications are proposed to provide surgeons with additional options for matching variation in patient anatomical needs.

**Testing:**
The following engineering analyses were conducted to demonstrate substantial equivalence of the proposed Equinoxe extra short humeral heads to the predicate Equinoxe short humeral heads:

- Cyclic fatigue testing
- Axial pull-off testing
- Surgical evaluation/cadaveric validation

**Substantial Equivalence Conclusion:**
Results of engineering studies referenced in this 510(k) submission demonstrate the proposed Equinoxe extra short humeral heads are substantially equivalent to cleared predicate Equinoxe short humeral head devices.

DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Food and Drug Administration
10903 New Hampshire Avenue
Document Control Center – WO66-G609
Silver Spring, MD 20993-0002

February 11, 2014

Exactech, Inc.
Mr. Patrick Hughes
Senior Regulatory Affairs Specialist
2320 Northwest 66th Court
Gainesville, Florida 32653

Re: K140063
Trade/Device Name: Exactech® Equinoxe® Extra Short Humeral Heads
Regulation Number: 21 CFR 888.3660
Regulation Name: Shoulder joint metal/polymer semi-constrained cemented prosthesis
Regulatory Class: Class II
Product Code: KWS
Dated: January 9, 2014
Received: January 13, 2014

Dear Mr. Hughes:

We have reviewed your Section 510(k) premarket notification of intent to market the device referenced above and have determined the device is substantially equivalent (for the indications for use stated in the enclosure) to legally marketed predicate devices marketed in interstate commerce prior to May 28, 1976, the enactment date of the Medical Device Amendments, or to devices that have been reclassified in accordance with the provisions of the Federal Food, Drug, and Cosmetic Act (Act) that do not require approval of a premarket approval application (PMA). You may, therefore, market the device, subject to the general controls provisions of the Act. The general controls provisions of the Act include requirements for annual registration, listing of devices, good manufacturing practice, labeling, and prohibitions against misbranding and adulteration. Please note: CDRH does not evaluate information related to contract liability warranties. We remind you, however, that device labeling must be truthful and not misleading.

If your device is classified (see above) into either class II (Special Controls) or class III (PMA), it may be subject to additional controls. Existing major regulations affecting your device can be found in the Code of Federal Regulations, Title 21, Parts 800 to 898. In addition, FDA may publish further announcements concerning your device in the Federal Register.

Please be advised that FDA's issuance of a substantial equivalence determination does not mean that FDA has made a determination that your device complies with other requirements of the Act or any Federal statutes and regulations administered by other Federal agencies. You must comply with all the Act's requirements, including, but not limited to: registration and listing (21

CFR Part 807); labeling (21 CFR Part 801); medical device reporting (reporting of medical device-related adverse events) (21 CFR 803); good manufacturing practice requirements as set forth in the quality systems (QS) regulation (21 CFR Part 820); and if applicable, the electronic product radiation control provisions (Sections 531-542 of the Act); 21 CFR 1000-1050.

If you desire specific advice for your device on our labeling regulation (21 CFR Part 801), please contact the Division of Small Manufacturers, International and Consumer Assistance at its toll-free number (800) 638-2041 or (301) 796-7100 or at its Internet address http://www.fda.gov/MedicalDevices/ResourcesforYou/Industry/default.htm. Also, please note the regulation entitled, "Misbranding by reference to premarket notification" (21CFR Part 807.97). For questions regarding the reporting of adverse events under the MDR regulation (21 CFR Part 803), please go to http://www.fda.gov/MedicalDevices/Safety/ReportaProblem/default.htm for the CDRH's Office of Surveillance and Biometrics/Division of Postmarket Surveillance.

You may obtain other general information on your responsibilities under the Act from the Division of Small Manufacturers, International and Consumer Assistance at its toll-free number (800) 638-2041 or (301) 796-7100 or at its Internet address http://www.fda.gov/MedicalDevices/ResourcesforYou/Industry/default.htm.

Sincerely yours,

Lori A. Wiggins

for
Mark N. Melkerson
Director
Division of Orthopedic Devices
Office of Device Evaluation
Center for Devices and
Radiological Health

Enclosure

**Exactech® Equinoxe® Extra Short Humeral Heads**
**Special 510(k) – Indications for Use**

**510(k) Number:** K140063

**Device Name:** Exactech® Equinoxe® Extra Short Humeral Heads

**INDICATIONS**
The Equinoxe Shoulder System is indicated for use in skeletally mature individuals with degenerative diseases or fractures of the glenohumeral joint where total or hemi-arthroplasty is determined by the surgeon to be the preferred method of treatment.

- The cemented primary humeral stem, long/revision stem, fracture stems and all Equinoxe glenoids are intended for cemented fixation.
- The press-fit humeral stems are intended for press-fit applications but may be used with bone cement at the discretion the surgeon.
- The reverse humeral components are intended to be used in cemented applications or in revision cases when the humeral component is well-fixed/stable, as deemed by the orthopaedic surgeon.
- Humeral Heads are intended for use in cemented and press-fit applications.

Clinical indications for the PRIMARY (P), LONG/REVISION (L), and FRACTURE (F) humeral components are as follows:

| P | L | F | Indications |
|---|---|---|---|
| √ | √ | | Rheumatoid arthritis, osteoarthritis, osteonecrosis or post-traumatic degenerative problems |
| √ | √ | | Congenital abnormalities in the skeletally mature |
| √ | | | Primary and secondary necrosis of the humeral head |
| √ | | √ | Humeral head fracture with displacement of the tuberosities |
| √ | √ | | Pathologies where arthrodesis or resectional arthroplasty of the humeral head are not acceptable |
| √ | √ | | Revisions of humeral prostheses when other treatments or devices have failed (where adequate fixation can be achieved) |
| | | √ | Displaced three-part and four-part upper humeral fractures |
| | √ | | Spiral and other fractures of the mid-humerus (in combination with glenohumeral degenerative diseases) |
| | √ | | Revision of failed previous reconstructions when distal anchorage is required |
| √ | √ | | To restore mobility from previous procedures (e.g. previous fusion) |

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The Equinoxe Platform Fracture Stem is indicated for use in skeletally mature individuals with acute fracture of the proximal humerus and displacement of the tuberosities, displaced 3- and 4-part fractures of the proximal humerus (hemi-arthroplasty), or acute fracture of the proximal humerus with failure of the glenohumeral joint (primary total shoulder arthroplasty). The Equinoxe Platform Fracture Stem is also indicated for acute fracture of the proximal humerus in combination with degenerative diseases of the glenohumeral joint and a grossly deficient, irreparable rotator cuff resulting in superior migration of the humeral head (reverse total shoulder arthroplasty). The Equinoxe Platform Fracture Stem is indicated for cemented use only.

| | | |
|---|---|---|
| **Prescription Use__X__** | **and/or** | **Over-The-Counter Use_____** |
| **(Part 21 CFR 801 Subpart D)** | | **(21 CFR 807 Subpart C)** |

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**Concurrence of CDRH, Office of Device Evaluation (ODE)**

Casey L. Hanley, Ph.D.

Division of Orthopedic Devices